

AMENDMENTS TO THE CLAIMS

1-50. (Cancelled)

51. **(Currently Amended)** A method according to claim [[44]] 84, wherein ~~said~~ ~~invariable is~~ the heating characteristic at each of the measuring locations is an m-value is defined by:

$$m = \frac{1}{t} \ln \left[\frac{T_a - T_{int}}{T_a - T_s} \right]$$

wherein ~~ln~~ ln is natural logarithm, T_a is heating temperature ~~of~~ at the measuring location of the heating furnace, T_{int} is initial temperature ~~of~~ at the measuring point of the object at the measuring location, T_s is achieved temperature when the object is heated at the measuring location, and t is heating time at the measuring location.

52. **(Currently Amended)** A method according to claim 51, wherein the temperature T_s of the object is determined when the heating temperature T_a and the heating time t of the heating furnace are given, or the heating temperature T_a and the heating time t are determined when a required temperature T_s is given by using said m-values based on a following ~~basic~~ equation for heating:

$$T_s = T_a - (T_a - T_{int}) e^{-m \cdot t}$$

wherein e in the equation represents the base of natural logarithms.

53. **(Currently Amended)** A method according to claim 51, wherein said m-value is

adjusted based on a predetermined equation of relationship between ~~the~~ a blowing speed of ~~the~~ heated air of the heating furnace and the m-value when the blowing speed of the heated air of the heating furnace is changed.

54-83. (Canceled)

84. **(New)** A method of thermal analysis for determining an appropriate heating condition for heating an object to be introduced into and heated in a heating furnace in accordance with a required temperature profile, wherein said method comprises:

measuring a temperature at a measuring point of the object to be heated at each of a plurality of measuring locations of the heating furnace during a heating procedure for increasing the temperature of the object after introduction of the object into the heating furnace;

determining a heating characteristic at each of the measuring locations by using a heating temperature at the measuring location and the temperature measured at the measuring point of the object, the measuring location being a location through which the object to be heated passes along a transferring direction in the heating furnace; and

simulating a temperature profile of the object to be heated when a heating condition is changed by using the heating characteristic that is determined at each of the measuring locations.

85. **(New)** A method of thermal analysis according to claim 84, wherein the method further comprises:

making a judgment as to whether or not the simulated temperature profile of the object to be heated when the heating condition is changed satisfies a required temperature profile;
and

determining the heating condition that satisfies the required temperature profile based on the judgment.